



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,538	05/12/2004	Jan Princeton Plummer		3537
35124	7590	05/19/2006		
JAN P. PLUMMER 341 ENGLAND PL NE. MARIETTA, GA 30066			EXAMINER LUKS, JEREMY AUSTIN	
			ART UNIT	PAPER NUMBER
			2837	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/709,538

Applicant(s)

PLUMMER, JAN PRINCETON

Examiner

Jeremy Luks

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 is objected to because of the following informalities: Claim 1 states "a baffle board to allow mounting at least one bi-directional loudspeaker transducer, at least one bi-directional radiating loudspeaker." The drawings and specification support an embodiment that comprises only one loudspeaker, not a combination of a loudspeaker transducer and a radiating loudspeaker. Therefore, the loudspeaker transducer and radiating loudspeaker should be claimed in the alternative, or one should be omitted from the claims. Appropriate correction is required.
2. Claim 6 recites the limitations "said driver", "said aperture", "said embedded acoustic transmission line", and "said center aperture" in an independent claim. There is insufficient antecedent basis for these limitations in the claim.
3. Claim 9 is objected to because of the following informalities: "claim6wherein," should be re-written as "claim 6 wherein". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 2837

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,169,811). Dunning teaches an enclosure (Figure 3, #10) with six outer walls and six inner walls connected to form a box structure (12), three of said inner walls (Figure 2, #21, 23, 25) being one of three wave-guides forming an embedded space (37); a second enclosure (30) disposed within said first enclosure (Figure 3, #10), using one of the walls (Figure 2, #54) of said first enclosure (Figure 3, #10) to complete its structure while the other three walls (Figure 2, #31, 33, 35) also form the second of the required wave-guides constructing an embedded space (37); a termination member (38) affixed at the end of said embedded space (37) to seal and form the third of the required wave-guides constructing an embedded space (37); an alternative density transmission medium affixed to at least one of said wave guides covering a majority of its surface (Col. 1, Lines 62-69, Col 2, Lines 63-65); at least one opening in the wall common to both structures hereinafter called a baffle board to allow mounting of a speaker(62). Dunning fails to teach at least one bi-directional loudspeaker transducer, and at least one aperture located in at least one interior wall preferably the back of said second enclosure of a proportional diameter or area creating a throat/mouth opening to an embedded acoustic transmission line. However, Croft teaches at least one bi-directional loudspeaker transducer (Figure 15B, Examiner is referring to the speaker-like image located in the in the top-middle portion of Figure

Art Unit: 2837

15B), and at least one aperture (20) located in at least one interior wall of a proportional diameter or area creating a throat/mouth opening to an acoustic transmission line (101).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Dunning with the design of Croft in order to increase the low frequency output of the speaker cabinet without increasing the size of the speaker.

With respect to Claim 2, Croft teaches a port (Figure 12B, #27) means extending through interior cabinet through a baffle board; a passive diaphragm (27) means mounted on a baffle board instead of a port (Col. 16, Lines 57-67).

With respect to Claim 3, Croft teaches a second enclosure (Figure 7B, #26) placed in front of a driver (11) to provide air mass for acoustic low pass function, a mechanical passive radiator means (27) is used to launch a particular range of low frequencies from the new air volume (Col. 9, Lines 3-18, 62-64; Col. 10, Lines 56-58).

5. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,389,146).

With respect to Claim 6, Dunning teaches an alternative density transmission medium affixed to at least one wall (Figure 3, #25) of one wave-guide (Col. 1, Lines 62-69, Col 2, Lines 63-65). Dunning fails to teach a first and second wave-guide disposed directly in front of and around said driver so mounted at right angles with said center aperture in said second wave-guide and in a radial relationship with said second wave-guide so as to create a channel expanding from the center in a radial manner, a termination member disposed at the opposite end of the pair of wave-guides disposed

Art Unit: 2837

to block wave in the embedded acoustic transmission line to cause a reversal of said wave; a loudspeaker driver of suitable diameter and power handling capability mounted at said mouth of said embedded acoustic transmission line. Nevertheless, Croft teaches a first and second wave-guide (Figure 6, #10, 51) disposed directly in front of and around a driver (11) so mounted at right angles with said center aperture in said second wave-guide (51) and in a radial relationship with said second wave-guide (51) so as to create a channel expanding from the center in a radial manner, a termination member disposed at the opposite end of the pair of wave-guides (10, 51) disposed to block wave in the embedded acoustic transmission line (21) to cause a reversal of said wave; a loudspeaker driver (11) of suitable diameter and power handling capability mounted at a mouth of said embedded acoustic transmission line (21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Dunning with the design of Croft in order to increase the low frequency output of the speaker cabinet without increasing the size of the speaker.

With respect to Claim 8, Croft teaches an acoustic low pass filter using an enclosure (Figure 5, #10) and a port tube (30) of proper diameter and length; said acoustic low pass filter is an enclosure (Figure 7, #10) and a passive radiator diaphragm (30a) of proper diameter and mass (Col. 7, Line 55- Col. 8, Line 24; Col. 9, Lines 41-43).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,169,811), further in view of Rocha (6,094,495). Dunning



Art Unit: 2837

and Croft are relied upon for the reasons and disclosures set forth above. Dunning and Croft fail to teach a horn type expansion diaphragm means is coupled to the driver. However, Rocha teaches teach a horn type expansion diaphragm means (Figure 3A, #106) is coupled to a driver (102).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatuses of Dunning and Croft with the structure of Rocha to increase the propagation of the sound waves from the driver.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,169,811), further in view of Norris (2002/0076069).

Dunning and Croft are relied upon for the reasons and disclosures set forth above.

Dunning and Croft fail to teach planar type of flat panel driver that produces sound waves bi-directionally, comprising an electrostatic type sound panel for any frequency range. Nevertheless, Norris teaches a planar type of flat panel driver (Figure 1, #10) that produces sound waves bi-directionally, comprising an electrostatic type teach planar type of flat panel driver that produces sound waves bi-directionally (Page 4, [0042]), comprising an electrostatic type sound panel (Page2, [0031]) for any frequency range.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatuses of Dunning and Croft with the speaker of Norris to provide a compact flat speaker that will line up flush with the enclosure and eliminate the potential damage to the fragile diaphragm present with conventional moving coil drivers.

Art Unit: 2837

8. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,389,146), and further in view of Rocha (6,094,495).

Dunning and Croft are relied upon for the reasons and disclosures set forth above.

Dunning and Croft fail to teach a compression plug mounted directly in front of the said driver to guide wave and increase pressure on said driver to maintain pressure differential with atmosphere. However, Rocha teaches a compression plug (Figure 3C, #124, 126) mounted directly in front of the said driver to guide wave and increase pressure on said driver to maintain pressure differential with atmosphere (Col. 4, Lines 44-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatuses of Dunning and Croft with the structure of Rocha to permit higher frequencies to be transmitted by the speaker assembly.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,389,146), and further in view of Pritchard (6,411,720).

Dunning and Croft are relied upon for the reasons and disclosures set forth above.

Dunning and Croft fail to teach a common housing for multiple embedded acoustic transmission lines (Figure 7) to contain multiple enclosure as a single subwoofer system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatuses of Dunning and Croft with the structure Pritchard accommodate the need for a large multi-speaker system, while saving space and using less materials for production.



Pritchard fails to teach multiple independent embedded acoustic transmission line enclosures each of a dimension appropriate for the driver representing that frequency range; multiple different dynamic transducers each of a different diameter appropriate for that frequency range. However, it would have been an obvious matter of design choice to have transducers each of a different diameter, and enclosures of different dimensions, since such a modification would have involved a mere change in size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Further, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have multiple independent embedded acoustic transmission line enclosures and multiple dynamic transducers, since it has been held that a mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunning (3,430,728) in view of Croft (6,389,146), and further in view of Takahashi (6,013,362). Dunning and Croft are relied upon for the reasons and disclosures set forth above. Dunning and Croft fail to teach wherein alternate density transmission medium is open cell urethane foam. Nevertheless, Takahashi teaches an open cell urethane foam (Col. 2, Lines 23-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatuses of Dunning and Croft with the material or Takahashi because of its superior sound absorbing characteristics.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent arts of record relating to closed loop embedded audio transmission line technology for loudspeaker enclosures and systems are disclosed in the PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Luks whose telephone number is (571) 272-2707. The examiner can normally be reached on Monday-Thursday 8:30-6:00, and alternating Fridays 8:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2837

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeremy Luks  
Patent Examiner

Art Unit 2837



LINCOLN DONOVAN  
PRIMARY EXAMINER  
GROUP 2100